Louisiana Department of Environmental Quality (LDEQ) Responses to EPA's Review of Draft Final Rule WQ097

August 13, 2019

EPA response: September 9, 2019

The LDEQ appreciates your comments related to the 2016 Triennial Review. This document will address substantial comments in both documents submitted by EPA on July 11, 2019. In a separate file, the LDEQ has direct responses to all comments offered by EPA in the markup document.

1. **Adoption of new or updated CWA Section 304(a) Criteria Recommendations**
   LDEQ Response: As part of the 2016 Triennial Review, the LDEQ considered EPA's new or updated CWA Section 304(a) criteria recommendations. The agency believes it is using valid methodology and data inputs in its calculations for both human health and aquatic life criteria.

   EPA appreciates the thoughtful and well-articulated responses to all of our comments, both here and in the accompanying mark-up document. In our previous comments we made reference to amendments to 40 CFR § 131.20(a) which requires any state that chooses not to adopt new or revised criteria for any parameters for which the EPA has published new or updated criteria recommendations under CWA § 304(a) since 2000 to explain its decision when reporting the results of its triennial review to the EPA. Unfortunately, we did not clearly indicate that this must be provided for *all* such parameters, not just those which were of special emphasis in our follow-up comments (e.g. amended HHC, cadmium, selenium, etc). We apologize for this lack of clarity. We respectfully request that LDEQ provide these explanations to EPA now or as part of the state's submission of its final rule. We also recommend, but do not require, that LDEQ make these explanations publicly available for review with other materials supporting water quality rule changes to fully maximize transparency with the public.

   Attached with this document are examples from another Region 6 state and a Region 6 tribe of how these explanations may be presented. One example lists all of the parameters for which criteria that have been updated by EPA since 2000 alongside the state's explanation of its plans to consider these updates. The other example is a more simplified version that describes classes of criteria and the tribal agency's plan to address those classes of criteria. We have also provided an attachment to this review that lists all of the parameters for which criteria have been updated by EPA since 2000 that have not yet been added to, or updated in, the Louisiana water quality standards (organized by aquatic life (ALC) and human health criteria (HHC)).

   a. **Human Health Criteria (HHC)**

i. Use of Bioconcentration Factors (BCFs) in Deriving HHC

LDEQ Response: At this time, the agency is investigating the use of bioaccumulation factors (BAFs) in place of (BCFs) in deriving HHC. The new EPA methodology affirms that bioconcentration underestimates the extent of accumulation and degree of exposure an aquatic organism has to a toxic substance (USEPA, 2000). However, the EPA still recommends using the bioconcentration methodology for deriving HHC for cyanide and dinitrophenols, and BAF value estimates for 19 toxic substances are measured through BCF values via the "BCF Method" (USEPA, 2016a). The LDEQ asserts the use of BCFs in deriving HHC is still valid.

EPA acknowledges the accepted use of the "BCF Method" to derive BAFs for some parameters. Please note that using the "BCF method" still results in BAF values. BAF values are estimated from laboratory-measured BCFs with or without adjustment by a food chain multiplier. Similar to field BAFs, laboratory measured BCFs are normalized with the lipid fraction and the fraction of the total concentration of chemical in water that is freely dissolved, then multiplied by the food chain multiplier where applicable. Adjusting the BCFs using a food chain multiplier, where appropriate, accounts for exposure via the diet. BCF data are then transformed to a "nationally representative BAF". Despite EPA's recommendation of this method as an option for deriving BAFs, or the use of BCFs for the identified parameters, EPA no longer considers the use of BCFs in lieu of BAFs as adequate when calculating HHC for those parameters for which EPA has published nationally recommended BAFs.

The LDEQ asserts the use of EPA's nationally recommended default BAF values and lipid fractions per trophic level generated by a nationwide aggregate of species will derive inappropriate HHC for Louisiana. For example, the top four organisms (*Anodonta anatine, Pseudanodonta complanata, Jordanella floridae,* and members of Family Salmonidae) with the highest average of percent body lipids described in EPA's National BAF Supplemental Information Table are not found in Louisiana (USEPA, 2016b); further, two of these organisms (*A. anatine* and *P. complanata*) are not found in North America. Nonresident organisms with higher percent body lipid averages can generate high BAF values, which may in turn derive inappropriate HHC.

The LDEQ reasserts it is evaluating appropriate BAF values and lipid fractions per trophic level for appropriate resident Louisiana aquatic species and the use of nationally recommended values in the interim is unwarranted.

EPA acknowledges and supports LDEQ's preference to continue its efforts to derive BAFs based on lipid fractions per trophic level for appropriate resident Louisiana aquatic species. States have flexibility to make adjustments to national BAFs to reflect local conditions.

We sincerely appreciate LDEQ's use of new exposure factors in the proposed HHC updates as well as the care taken to generate state-appropriate BAFs for use in future criteria. However, in light of EPA's concerns with the use of BCFs in lieu of BAFs to amend HHC in Louisiana, and the state's ongoing efforts to address this issue in future water quality standards updates, EPA recommends that LDEQ consider delaying the proposed updates of HHC in rule WQ097 until which time state-specific BAFs can be calculated and incorporated fully into the state's HHC (with the exception of cyanide, which relies entirely on the BCF). This would allow EPA to take action on HHC that more comprehensively incorporate all of LDEQ's newly proposed exposure factors as well as state-appropriate BAFs. This would also allow EPA to take action on HHC criteria for each parameter only once, as opposed to piecemeal fashion, which we believe would cause less confusion to the public.

Obviously, while this process could be carried out for all parameters in Table 1 in a single rulemaking, it could also be done in phases as BAFs are generated for different chemical categories or groups of individual chemicals of primary concern. As always, EPA staff remain willing and able to help Louisiana derive state-specific BAFs in a timely manner if the state needs such assistance.

ii. Absence of Relative Source Contribution (RSC) in Deriving Non-carcinogen HHC

LDEQ Response: Another component of the new EPA methodology is RSC, which estimates "nonwater sources of exposure [both ingestion exposures (i.e., non-fish or shellfish food consumption) and exposures other than the oral route (i.e., dermal and inhalation)]", in addition to water and fish consumption rates. "The purpose of the RSC is insure that the level of a chemical allowed by a criterion or multiple criteria, when combined with other identified sources of exposure common to the population of concern, will not result in exposures that exceed the RfD (reference dose)" (USEPA, 2000). The LDEQ concurs that the level of a chemical allowed by a criterion should not result in exposures that exceed the RfD.

The LDEQ asserts the inclusion of an estimated input for "nonwater" sources of exposure in the derivation of HHC digresses from the focus of the media it is designed to protect (i.e., water) and from the principal goal

of the CWA (i.e., to restore and maintain the chemical physical and biological integrity of the Nation's waters, where attainable). There are more practical and appropriate federal and state regulatory mechanisms to protect human health that directly control the transmission of toxic substances through "nonwater" sources of exposure, including but not limited to the Food Safety and Modernization Act (FSMA), the Food Quality Protection Act (FQPA), the Federal Food, Drug, and Cosmetic Act (FFDCA), and the Occupational Safety and Health Act (OSHA).

Table 1 (see below) lists twelve toxic substances, eleven non-carcinogenic substances and one nonlinear carcinogen (chloroform), with numeric criteria in Louisiana that would be affected by the use of RSC data input; also shown are several existing state and federal regulatory mechanisms which control these twelve toxic substances. All twelve toxic substances identified in Table 1 are regulated by the LDEQ as hazardous constituents in the Louisiana Administrative Code (LAC) (LAC 33:V §2299) and are regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Ten of the twelve toxic substances are regulated by EPA through the Resource Conservation and Recovery Act (RCRA). Nine of the twelve toxic substances are regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); and seven of the twelve toxic substances are regulated by the Clean Air Act (CAA).

Toxic Substance (CAS#)	**LAC**	**FIFRA**	**CAA**	**RCRA**	**CERCLA**
Chloroform (67-66-3)	Yes	Yes	Yes	Yes	Yes
2-Chlorophenol (95-57-8)	Yes	Yes	No	Yes	Yes
Cyanide (57-12-5)	Yes	Yes*	Yes*	Yes*	Yes
2,4-Dichlorophenoxyacetic acid (2,4-D) (94-75-7)	Yes	Yes	Yes	Yes	Yes
2,4-Dichlorophenol (120-83-2)	Yes	No	No	Yes	Yes
Endosulfan (1031-07-8)	Yes	No	No	No	Yes
Endrin (72-20-8)	Yes	Yes	No	Yes	Yes
Ethylbenzene (100-41-4)	Yes	No	Yes	No	Yes
Phenol, Total (108-95-2)	Yes	Yes	Yes	Yes	Yes
Toluene (108-88-3)	Yes	Yes	Yes	Yes	Yes
1,1,1-Trichloroethane (71-55-6)	Yes	Yes	Yes	Yes	Yes
2,4,5-TP (Silvex) (93-72-1)	Yes	Yes	No	Yes	Yes

Table 1. Toxic substances with numeric criteria in Louisiana that could be affected by the RSC data input. Also shown are existing federal and state regulatory mechanisms which control these toxic substances. *cyanide compounds are listed instead of free cyanide

The LDEQ also found the EPA guidance related to RSC does not satisfactorily demonstrate the need or value of including "nonwater"

sources of exposure. The EPA document Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000), introduced RSC as a data input. The EPA recommends use of RSC in order to make the CWA and the Safe Drinking Water Act (SDWA) more congruent, by "increasing the degree of consistency between the drinking water and ambient water programs, given the somewhat different requirements of the CWA and SDWA" (USEPA, 2000). Thus, since the SDWA has RSC, so should the CWA.

A part of RSC estimates the relative contribution of "non-oral" exposure routes (i.e., dermal and respiratory exposure) as being a percentage of the calculated RfD from oral toxicity studies. As a default value, the EPA recommends using 20% for RSC, meaning 20% of the calculated RfD from oral toxicity studies can only be attributed to the oral exposure route and 80% to "non-oral" exposure routes (USEPA, 2000). Thus, applying a 20% RSC to a criterion makes them 80% more stringent in order to account for "non-oral" exposure routes. The oral ingestion exposure route affects different organ systems than the dermal and respiratory exposure routes, and threshold effects used to calculate an RfD can vary per exposure route. The LDEQ asserts the EPA guidance did not adequately justify how the measured RfD from oral toxicity studies correlate with measured RfD values from dermal and respiratory toxicity studies to justify the use of RSC.

According to EPA's Pesticide Product and Label System, 2-chlorophenol, endrin, 1,1,1-trichloroethane, and 2,4,5-TP (Silvex) are no longer used as active ingredients in pesticides (USEPA *Pesticide Product and Label System* https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1). Endrin has been banned since 1986, has a half-life of five years, and was last observed in Louisiana waters in 2002 (Appendix A). In the example of endrin, the EPA is recommending the LDEQ to impose upon Louisianans, who eat fish, drink water, and recreate, human health water quality criteria that are 80% more stringent because of they also breathe air, eat "non-fish foods" (such as fruits, grains, poultry, etc.), and may be exposed to a substance with a half-life of five years that has been banned for more than 30 years. The LDEQ asserts the use of RSC is overly conservative in deriving water quality criteria for the general population.

Accounting for the exposure route of "non-fish" ingestion is redundant, because it is irrelevant in oral toxicity testing whether the consumable is a fish or not, so long as the substance is admitted orally to the test subject. The LDEQ asserts that counting the oral exposure route twice reduces accuracy in criteria calculations.

Accounting for the dermal exposure route is also redundant because it is a component of the recreational designated uses, be it full body immersion or incidental contact. Thus, dermal exposure can be considered a waterborne exposure route for the general population. Incidental ingestion of water is already a data input for DWS, FWP, and primary contact recreation (PCR) criteria calculations. As previously mentioned, if a waterbody has the DWS designated use, other designated uses (such as FWP and recreational uses) are concurrently protected by HHC, since DWS is the most sensitive use.

Furthermore, the Agency for Toxic Substances and Disease Registry (ATSDR), National Institute for Occupational Safety and Health (NIOSH), and chemical manufacturer safety data sheets (SDS) provide measured RfDs and reference concentrations (RfCs) for oral, dermal, respiratory, and other exposure routes of most toxic substances. The LDEQ acknowledges toxicity tests for the dermal and respiratory exposure routes may not be available for some toxic substances; however, it is highly questionable as to how the estimation of 20 to 80% of the RfD from oral toxicity studies will, in all certainty, not result in adverse effects from dermal or respiratory exposure. The LDEQ asserts the use of RSC is based upon policy, not science, and that only oral ingestion, waterborne exposure routes (i.e., water and fish consumption) of toxic substances should be considered in the derivation of non-carcinogen HHC.

Because of these enumerated factors, the LDEQ believes the RSC is a superfluous data input that is overly conservative and redundant for use in non-carcinogen HHC calculations. The LDEQ acknowledges and appreciates the EPA's effort in further developing and improving HHC methodology. However, the LDEQ reasserts the inclusion of RSC generates overprotective criteria by accounting for "nonwater" and "non-oral" exposure routes of toxic substances that are already controlled through appropriate media in multiple federal and state regulatory mechanisms other than the CWA. The LDEQ is committed to providing the citizens of Louisiana with appropriate water quality criteria to protect human health. Therefore, based on the reasons discussed above on the RSC being overly conservative and redundant in deriving non-carcinogen HHC, the LDEQ will not utilize RSC in non-carcinogen HHC calculations. If compelled to do so, the LDEQ will use an RSC value of 1.0 for non-carcinogen HHC calculations, because it asserts the oral exposure route accounts for 100% of the RfD.

We appreciate the comment. As noted in Section 4.2.1 of EPA's 2000 Human Health Methodology, EPA "emphasizes that the purpose of the RSC is to ensure that the level of a chemical allowed by a criterion or multiple

criteria, when combined with other identified sources of exposure common to the population of concern, will not result in exposures that exceed the RfD…" In essence, criteria that reflect 100% of the RfD leave no buffer room for additional exposures from other 'non' ambient water/fish consumption sources that, in aggregate, may result in overexposure of a population to a contaminant. As noted by LDEQ, there are additional regulatory authorities external to the Clean Water Act that exist to control other exposure sources, but there may not be complete assurance that controls implemented under these authorities will result in *no* additional exposure to a particular contaminant. In cases where such exposures cannot be ruled out or adequately quantified, EPA does recommend the use of a RSC of 0.2. We acknowledge that this factor does result in much more protective criteria than they would be if only waterborne sources of exposure were accounted for. However, it is EPA's preference to err on the side of being more protective against any adverse impacts to human health that may arise from cumulative exposures to other media than just water or fish (although EPA does provide for use of a less conservative RSC using EPA's Decision Tree approach in cases where substantial data sets describing exposures across all anticipated pathways of exposure exist). As also noted in Section 4.2.1 of EPA's Human Health Methodology, EPA acknowledges its reliance on this policy:

> "The policy of considering multiple sources of exposure when deriving health-based criteria has become common in EPA's program office risk characterizations and criteria and standard-setting actions. Numerous EPA workgroups have evaluated the appropriateness of factoring in such exposures, and the Agency concludes that it is important for adequately protecting human health. Consequently, EPA risk management policy has evolved significantly over the last six years. Various EPA program initiatives and policy documents regarding aggregate exposure and cumulative risk have been developed, including the consideration of inhalation and dermal exposures. Additionally, accounting for other exposures has been included in recent mandates (e.g., the Food Quality Protection Act) and, thus, is becoming a requirement for the Agency."

iii. Dioxin and PCBs

LDEQ Response: Although EPA's new or updated CWA Section 304(a) criteria recommendations did not change for dioxin and PCB's (both issued in 2002), the LDEQ did recalculate their HHC using updated data inputs for body weight, drinking water intake, and fish consumption. For this

triennial, the risk level for dioxin was changed from 10^{-5} to 10^{-6}, which requires an edit to LAC 33:IX.1113.C.6.c.

The draft final rule WQ097 rule shared with EPA on May 9, 2019 did not include adjusted HHC for dioxin and PCBs. The amended draft final rule WQ097 (LDEQ's response to the markup document) now has the correct criteria and an amended risk level citation. These changes do not affect footnotes related to dioxin or PCBs.

We appreciate the revisions to the rule for these parameters. In looking at the criteria amendment for hexachlorocyclohexane (lindane) in Table 1, it appears that a risk level of 10^{-6} was used for this parameter as well. In 1113.C.6.c (page 24 of the markup), the text indicates that a risk level of 10^{-5} applies to this parameter. (Sorry we missed this in our first review.)

b. Aquatic Life Criteria (ALC)

i. Cadmium

LDEQ Response: As part of the 2016 Triennial Review, the LDEQ considered EPA's 2016 cadmium ALC criteria document (USEPA, 2016c). Current LDEQ cadmium ALC are based on a species recalculation that eliminated sensitive nonresident species from the original dataset (USEPA, 1985). The agency found EPA's updated recommended criteria calculations used species that are nonresident in Louisiana. At this time, the agency is evaluating revisions to cadmium ALC using appropriate species for recalculation based on EPA's 2016 criteria document.

We appreciate the response. EPA can provide technical support in this effort where needed. Please note EPA's revised deletion process for species recalculation procedures here:

https://www.epa.gov/sites/production/files/2015-08/documents/revised_deletion_process_for_the_site-specific_recalculation_procedure_for_aquatic_life_criteria.pdf

ii. Selenium

LDEQ Response: As part of the 2016 Triennial Review, the LDEQ considered EPA's 2016 selenium freshwater ALC document (USEPA, 2016d). The LDEQ has been recently granted funding by EPA to monitor selenium at twelve ambient monitoring sites, and this data collection effort will help to inform the agency on selenium concentrations in selected waterbodies. The LDEQ will reevaluate adoption of selenium freshwater aquatic life criteria after this data collection effort is complete.

We appreciate the response.

iii. **Methylmercury**

LDEQ Response: According to LDEQ's 2016 Report of Findings document, methylmercury was not considered for criteria development in this Triennial Review. The LDEQ has reviewed the citation provided by EPA; however at this time, the LDEQ does not have sufficient time or resources to evaluate methylmercury water quality criteria without considerable delay of WQ097 rulemaking, but will consider it for upcoming review.

We appreciate the response.

c. **Recreational Water Quality Criteria (RWQC) in Freshwater**

LDEQ Response: The agency is open to discussion with EPA on freshwater RWQC.

We appreciate the response.

2. **Frequency and Duration Components with Numeric ALC**

LDEQ Response: As part of the 2016 Triennial Review, the LDEQ considered EPA's new or updated CWA Section 304(a) criteria recommendations for aquatic life criteria (ALC). The agency observed that the frequency and duration component were not recommended for all ALC recommendations, with the exception being ammonia. The agency concurs that acute and chronic criteria are useful in protecting aquatic life against exposures to pollutants. However, the agency asserts the citation of frequency and duration components of numeric ALC is unwarranted in Tables 1 and 1A of LAC 33:IX.1113 for the following reasons.

As noted in our previous comments, EPA recommends that duration and frequency components be added (perhaps as a footnote) to Table 1A, as recommended in the WQ097 markup for ammonia, for *all* aquatic life criteria in keeping with EPA's national guidelines.

The duration component is inherent in the calculated values for acute and chronic criteria. The EPA's duration recommendation for acute toxicity, or the criterion maximum concentration (CMC) is a 1-hour average, as where acute toxicity tests used to generate these values are conducted over 24 to 96-hours. Short-term adverse effects vary between aquatic species over these durations and the CMC is calculated from a ranking of the most sensitive species to a pollutant. The consideration of the duration these most sensitive species tolerated a pollutant is not included in calculations. Similarly, the EPA's duration recommendation for chronic toxicity, or the criterion continuous concentration (CCC) is based on an exposure to a 4-day average, as where chronic toxicity tests used to generate

these values are conducted at a minimum of 7-days. Again, the consideration of the duration the most sensitive species tolerated a pollutant is not included in CCC calculations. The LDEQ asserts the duration component is factored out when deriving CMC and CCC values, is inherent in the calculated short-term acute and long-term chronic values, and the protection of aquatic life against short and long-term exposures to pollutants is maintained without specifying duration.

EPA appreciates this comment. We acknowledge that exposure duration of the 4 most sensitive genera (reflected as GMAVs/GMCVs) is not a specific consideration used in deriving FAVs and CMCs/CCCs for aquatic life protection. However, Appendix D of EPA's 1991 document "Technical Support Document for Water Quality-based Toxics Control" (https://www3.epa.gov/npdes/pubs/owm0264.pdf) provides rationale for the use of appropriate durations based on the exposure durations used in the underlying toxicity tests. We hope that this adequately addresses LDEQ's assertions that specifying duration is not necessary because it is already inherent in calculating acute and chronic criterion values.

Rationale for shortened duration periods with respect to empirical testing conditions [Page D-2]:

"Even though only a few tests have compared the effects of a constant concentration with the effects of the same average concentration resulting from a fluctuating concentration, nearly all the available comparisons have shown that substantial fluctuations result in increased adverse effects. Thus, the duration of the averaging period must be shorter than the duration of the chronic tests on which the CCC is based so that the averaging period does not allow substantially more adverse effect than would have been caused by a continuous exposure to the same average concentration."

Rationale for 1-h Acute [Page D-3]:

"As with the CCC, the CMC averaging period should be substantially less than the lengths of the tests on which the CMC is based, i.e., substantially less than 48 to 96 hours. Because 4- to 8-hour LC50s are about the same as the 96-hour LC50 for some materials, the duration of the averaging period for the CMC should be less than 4 hours. One hour is probably an appropriate duration of the averaging period for the CMC because concentrations of some materials that are only a factor of two higher than the 96-hour LC50 cause death in one to three hours. Even when organisms do not die within the first hour or so, it is not known how many organisms might have died due to the delayed effects of the short exposure"

Rationale for 4-day Chronic [Page D-2]:

"For the following reasons, a 4-day averaging period is recommended for application of the CCC in aquatic-life criteria for both individual pollutants and Whole Effluents:

- It is substantially shorter than the 20- to 30-day duration of most chronic tests and is somewhat shorter than the 7-day duration of the Ceriodaphnia life-cycle test.
- The results of some chronic tests apparently are due to an acute effect on a sensitive life stage that occurs at some time during the test, rather than being caused by either long-term stress or long-term accumulation of the test material in the organisms. Horning and Neiheisel [17] documented one such situation, and others are probably the cause of at least some of the acute-chronic ratios that are not much greater than unity.
- For both endrin and fenvalerate, Jarvinen et al. [18] found that a 72-hour exposure caused about the same amount of effect on the growth of fathead minnows in early life-stage tests as did a 30-day exposure to the same concentration.
- In some life-cycle tests on effluents with Ceriodaphnids, concentrations of effluents that were a factor of 1.8 greater than the CCC caused unacceptable effects in 4 or 5 days.
- It is not so short as to effectively defeat the purpose of the concept of the averaging period."

The specification of 1-hour or 4-day averages in regulation may also result in unintended consequences. LDEQ staff collect water samples once a month at approximately 125 sites, generally in less than 20 minutes per site. It is unnecessary and not feasible to require staff to collect and/or composite water samples over a 1-hour or 4-day period of time per site. The codification of these durations may legally bind the agency to collect and/or composite samples in the described manner, which will likely result in an undue burden on staff and funding for monitoring. The LDEQ reasserts the specification of duration in Tables 1 and 1A of LAC 33:IX.1113 is unwarranted.

We understand the logistical and resource challenges faced by states in implementing the recommended duration component of aquatic life criteria. EPA has long allowed states flexibility to make judgments about the representativeness and use of data that were not collected in a manner consistent with the specific criteria duration requirements outlined in their water quality standards. See "Data Representativeness Considerations" on page 33 of EPA's 2006 Integrated Report Guidance at: https://www.epa.gov/sites/production/files/2015-10/documents/2006irg-report.pdf. States have long been required to make certain assumptions about the temporal and spatial extent to which their data, in many cases monthly grab data, represent water quality conditions. States often make use of those data despite their limitations. While these limitations have often abridged "the purpose of the concept of the averaging period", as suggested under bullet #5 above (4-day chronic rationale), EPA has generally accepted these limitations to make use of available data as appropriate. Despite these limitations in data, EPA believes that the duration component of EPA's 304(a) recommendations is a critical part of aquatic life criteria and should be included in state water quality standards.

EPA likewise notes that the 4-day duration component of chronic aquatic life criteria is already used in calculations of the chronic long-term average as described in the state's permit implementation guidance. Reflecting this duration component in the State's water quality standards would provide transparency and consistency for Louisiana permittees.

The EPA's recommendation of the frequency component of not more than once every 3-years on average already conforms to LDEQ's assessment methodology as described in *Quality Assurance Project Plan (QAPP) for the Ambient Water Quality Monitoring Network* and the biennial integrated report (LDEQ, 2017 and 2018). The agency asserts these documents are a better location to describe the frequency component than LAC 33:IX.1113. Furthermore, the agency assesses pollutants listed in Tables 1 and 1A LAC 33:IX.1113 based on the most stringent criterion, for which the chronic criterion is the most stringent. The LDEQ asserts the frequency component already exists to protect aquatic life against pollutants, and is maintained without specifying it in code.

EPA has long recommended, and LDEQ has long made use of, the 'no more than 1 in 3 years' frequency component for numeric toxics criteria. It is unlikely that this assessment practice will be changed in the foreseeable future. Again, reflecting this frequency component in Louisiana's water quality standards would provide transparency and consistency for the assessment program and permittees in Louisiana.

3. Antidegradation Policy and Implementation Plan

LDEQ Response: The LDEQ appreciates EPA comments and recommendations to improve verbiage in the section relevant to the antidegradation policy (LAC 33:IX.1109). The agency accepted almost all of the suggested changes in the markup document. Two outstanding comments related to antidegradation are addressed below.

a. Antidegradation Policy Parameter-by-Parameter, Pollutant-by-Pollutant & Hybrid Approaches (LAC 33:IX.1109.A.2.a)

LDEQ Response: At this time, agency work on this aspect led by the LDEQ Water Permits Division is ongoing and an approach has not yet been determined. In order to not delay the rulemaking of WQ097, the agency will continue its work on the approach and may address this concurrently with revision of the implementation plan (please see response 3.b).

We appreciate the response. While we continue to recommend that LDEQ identify the process they are going to use to make decisions about which waters receive Tier 2 protection, we understand that this is an item that needs additional internal discussion at LDEQ. Please note that LDEQ may identify this process either in rule or implementation guidance upon deciding which process it will follow.

b. Antidegradation Implementation Plan (LAC 33:IX.1119)

LDEQ Response: As discussed in the response above, the agency has ongoing work on antidegradation implementation which is led by the LDEQ Water Permits Division. In order to consider all of the EPA recommended changes to the section relevant to the antidegradation implementation plan (LAC 33:IX.1119) in WQ097, necessary agency review and coordination among multiple divisions would considerably delay the WQ097 rulemaking. The agency also believes it will be more practical and efficient to handle revision of the implementation plan language holistically, instead of piecemeal. The agency intends to continue the coordination led by the Water Permits Division regarding antidegradation policy and implementation plan. Comments submitted by EPA in August 2009 will be considered, along with comments submitted in July 2019 with WQ097.

Again, we understand that this is an item that needs additional internal discussion at LDEQ and agree that holistic changes to the rule would be preferable. We appreciate the response.

4. Subsegment Changes in LAC 33:IX.1123.Table 3

LDEQ Response: As part of the 2016 Triennial Review, the LDEQ reviewed all subsegment descriptions as listed in Table 3, subsegment designated uses, subsegment numerical criteria and subsegment boundaries, as delineated in GIS. All corrections presented in draft final rule WQ097 were made to either improve accuracy in subsegment descriptions, correct misspellings, correctly list designated uses or consolidate redundant, adjacent subsegments having the same designated uses and water quality criteria. An effort to simplify subsegment numbering, by eliminating extensions and unifying the numbering system to six-digits was also performed.

a. Deletion of non-six-digit subsegment example for Morgan Bayou and other subsegments

LDEQ Response: Beginning with this triennial, the LDEQ intends on using only six-digit subsegment numbers. The example provided in the markup has been corrected. Currently, there are eight subsegments in Table 1 having more than six digits; seven will be reassigned six-digit subsegment numbers and one (090207-5112) will be merged with its parent subsegment (090207; see next response for additional information).

b. Morgan Bayou (Subsegment 090207-5112) Deletion

LDEQ Response: Subsegment 090207-5112 will be merged with its parent subsegment (090207). Both subsegments have the same designated uses and water quality criteria.

c. Bayou Nantaches (Subsegment 100903) Deletion

LDEQ Response: Subsegment 100903 will be merged with an adjacent subsegment (100902). Both subsegments have the same designated uses and water quality criteria.

d. Bayou Choctaw (Subsegment 120103) Boundary Description Edit
LDEQ Response: This subsegment description was changed to describe more accurately the downstream boundary of Subsegment 120103 (ICWW). Bayou Grosse Tete is physically located in an adjacent subsegment (120104).

e. Bayou Chauvin (Subsegment 120507) Boundary Description Edit
LDEQ Response: This subsegment description was changed to describe more accurately the upstream boundary of Subsegment 120507 (ICWW). Ashland Canal is physically located in Subsegments 120501 and 120509.

f. Bayou Blue (Subsegment 120604) Boundary Description Edit
LDEQ Response: This subsegment description was changed to describe more accurately the upstream boundary of Subsegment 120604 (ICWW). Company Canal forms a very small portion of this boundary, unlike ICWW.

Upon further review of these proposed boundary description changes, we have no further comment. Thanks!

References

Louisiana Department of Environmental Quality (LDEQ), *Quality Assurance Project Plan for the Ambient Water Quality Monitoring Network*. 2017. QAPP 1004 Revision 9. LDEQ Office of Environmental Assessment, Baton Rouge, LA.

LDEQ, *Louisiana Water Quality Inventory: Integrated Report*. 2018. LDEQ Office of Environmental Assessment, Baton Rouge, LA.

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USEPA, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*. 2000. EPA-822-B-00-004. USEPA, Office of Water, Office of Science and Technology, Washington, D.C.

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Appendix A: Endrin Ambient Data (1991-present)

SITE/YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(0009) Mississippi River near St. Francisville, LA	0.1																											
(0051) Mississippi River at Belle Chasse, LA	0.1											0				0.7*	0	0	0	0	0	0	0	0	0	0	0	0
(0053) Mississippi River at Plaquemine, LA												0			0	0.75*	0	0	0	0	0	0	0	0	0	0	0	0
(0054) Mississippi River near Plaquemine, LA	0.1																											
(0055) Mississippi River near St. Francisville, LA												0			0	0.6*	0	0	0	0	0	0	0	0	0	0	0	0
(0318) Mississippi River south of Saint Francisville, LA	1.2	1	1.2	1	0.6	1.2	1.1	1.2	0.7	0.5	0.6	0	0	0														
(0319) Mississippi River east of Plaquemine, LA								0.7	0.7	0.5	0.6	1.9	0	0														
(0320) Mississippi River east of Belle Chasse, LA			0.1					0.7	0.8	0.5	0.5	0	0	0	0													
(0322) Mississippi River west of Point a la Hache, LA	1.1	1.1	1.2	1	0.6	1.2	1.1	0.5																				
(4031) Mississippi River @ USACE Mat Casting Dock																				0	0	0						
(4862) Mississippi River at Vidalia, LA																										0	0	

Data is represented as annual sums per monitoring site of endrin (μg/L).

*Data for 2007 were non-detects, but reported as the practical quantitation limit in the LEAU database.